



Ontario

ORDER No. 81-001

JANUARY 1981

AGDEX $\frac{230}{605}$

Factsheet

INSECTS AND DISEASES OF CANE FRUITS

(Reprinted February 1992)

C.L. Hunter, Soils and Crops Branch

In this Factsheet, descriptions are given of common cane-fruit insect pests and diseases, and their symptoms of injury. For controls requiring chemicals, refer to the current issue of OMAF Publication 360, *"Fruit Production Recommendations"* (for commercial plantings) or Publication 64, *"Insect and Disease Control in the Home Garden"*. Follow the manufacturer's instructions, and do not apply any pesticide closer to harvest than indicated on the label.

INSECTS

Aphids. Several species of aphids feed on the underside of leaves at the tips of new shoots. They seldom cause much visible injury. However, in their feeding, some aphids spread the viruses which cause mosaic and leaf curl. Aphids can be controlled with insecticides.

Cane Borer. In June, adult beetles cut two rings around the stem, about 12 mm apart and 10 to 20 cm below the tip of the new shoot. An egg is laid between the rings, and the tip of the shoot above the ring wilts and dies (Figure 1). This wilting is easily recognized. Larvae eventually bore down to the root and may kill the cane. Cut off and destroy tips of shoots below the rings as soon as wilting is seen.



Figure 1. Damage caused by raspberry cane borer. Note girdled cane and tip die-back.

Red-necked Cane Borer. In late summer and fall, yellowish-white grubs about 20 mm long make spiral tunnels just below the bark. Affected areas of the cane swell. Swollen areas are 2.5 to 5 cm long and about half as large again in diameter as the normal cane. The part of the cane above the swelling usually dies. When pruning, remove and destroy all canes showing swelling.



Figure 2. Sap Beetle

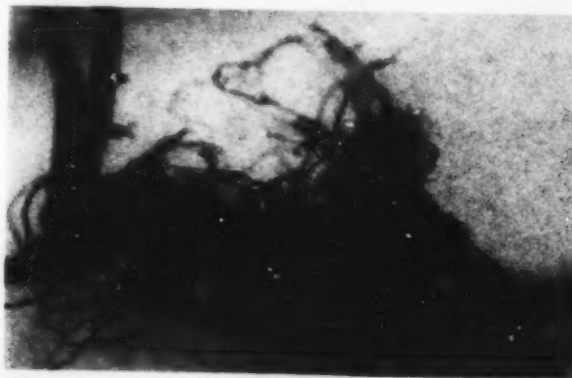


Figure 3. Raspberry Crown Borer

Crown Borer. Larvae are white to yellowish with a brown head, and are about 2.5 cm long. They bore in the bases of canes, crowns and larger roots (Figure 3). Their feeding either kills or greatly weakens plants. If boring is seen above ground, probe the holes with a sharp wire to kill the larvae. If injury is severe, an insecticide treatment may give satisfactory control. However, it may be necessary to remove the plants and destroy canes and larger roots. It is best to do this in October after all eggs have been laid by the adult moths.

Leaf Hoppers. Active, greenish-yellow, narrow, wedge-shaped insects about 3 mm long feed on the underside of young leaves. They cause yellow areas along veins and at the margin of the leaflets. Leaves are also somewhat distorted. Injury occurs mainly in late June and in July. Chemical control is usually not needed.

Blackberry Leaf Miner. Small, grayish-white larvae feed between the upper and lower surfaces of the leaf in early July. The mined areas turn brown. If injury is severe, almost all leaves die and drop off. New leaves which develop in August may also be attacked. Chemical control may be required.

Raspberry Fruitworm. Adult beetles are about 4 mm long and brown. They feed on flower bud clusters and opening leaves in the spring. The larvae are small, white "worms" about 6 mm long and feed in the flower buds and inside developing berries. This insect can be controlled with insecticides.

Raspberry Sawfly. Larvae are caterpillars about 18 mm long almost the same color as the leaves. In late May and early June, the larvae eat holes in the leaves and may devour all the leaf except the larger veins. They can be controlled with insecticides.

Sap Beetles. Adults are small, dark beetles about 6 mm long, with two or more yellow spots on each side of the body. They are attracted to ripe berries and feed by boring into the berries, especially overripe ones (Figure 2). Pick mature berries frequently and remove overripe berries which fall to the ground.



Figure 4. Crown gall

Two-spotted Mites. Adults are just large enough to be seen without magnification and feed mainly on the underside of the leaf. They are greenish yellow with two dark spots on the back. Affected leaves become a dull, grayish or coppery color and have silken webs on the underside. Injury is most common following harvest. Mites can be controlled with insecticides.

Tarnished Plant Bugs. Adults are small, coppery-brown bugs about 6 mm long. They feed on blossom buds and later feed on seeds and destroy their contents. Crumbly berries can result, although there are also other causes of crumbly berries. Plant bugs are often present in the fall on everbearing varieties. Control weeds as the bugs also feed on them. If very numerous, plant bugs can be controlled with insecticides.

DISEASES

Anthracnose. Small grayish spots with purple borders appear on canes and shoots in the summer. Spots may be very numerous and run together to form irregular patches. The bark of affected cane splits during winter, and during fruiting the canes dry out and break readily. Similar spots may occur on fruit stalks and leaves. Berries also may be affected, causing drupelets to turn brown and dry up. Control of this fungus can be obtained with fungicides.

Crown Gall. Gall or knots from the size of a pea to that of an apple develop on roots and the crown. Galls are white at first, turn brown and warty with age, and then decay (Figure 4). The bacteria causing these galls are present in most soils and invade the plant through breaks in the bark or through wounds. Avoid injury to plants. Proper nutrition of plants will largely offset the effects. Avoid planting in land where this disease has been a problem.

Fruit Rots. Dark gray, black, or olive-green molds occur on ripe berries. Berries may become soft and watery. These rots are more severe when warm, wet weather occurs during harvest. Rots develop quickly on overripe and damaged berries. Pick ripe berries frequently.

Orange Rust. This disease mainly affects blackberries. Affected plants have many upright, spindly shoots. A yellow coating appears on the underside of young leaves in the early spring. Later this coating breaks open exposing bright orange masses of spores. Leaves are dwarfed and misshapen. Diseased plants do not recover and produce no berries. Inspect plants often and dig out and destroy all affected plants as soon as they are found. Nearby wild blackberries or black raspberries may also be affected and should be destroyed.

Powdery Mildew. A white, powdery, fungus growth occurs on leaves at tips of new shoots. The growth is more dense on the lower side of the leaf. Leaves are dwarfed, distorted and mottled. Shoots are often stunted and the tip may be killed, causing the side branches to grow. Mildew on the berries makes them unattractive but does not affect the berries for freezing or other processing uses. Cut off and destroy diseased tips when pruning in the early spring. Control can also be obtained with fungicides.

Spur Blight. In midsummer, purple to brownish areas develop around the buds of the new shoots (Figure 5). The disease weakens canes and makes them susceptible to winter killing. By the next spring, diseased areas become light gray and are covered with tiny black specks. Buds in the affected areas may be killed or produce a weak branch on which leaves turn yellow and brown when berries are ripening. When the branch dries out, berries do not develop. Fungi-

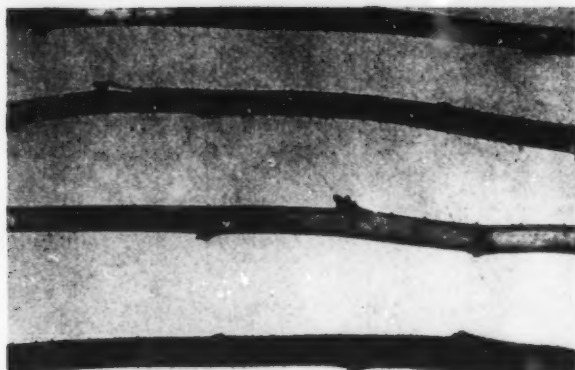


Figure 5. Spur blight on raspberry

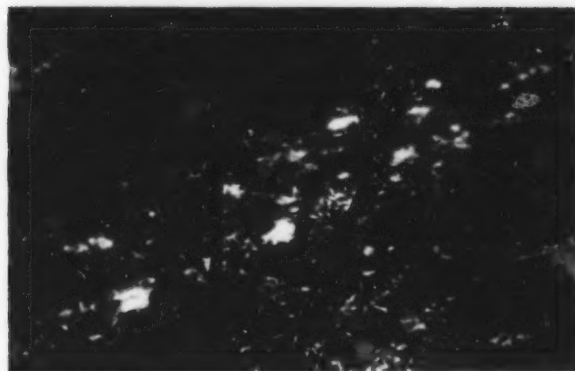


Figure 6. Verticillium wilt of raspberry. Note wilted leaves at tip of cane at left and blue stem colour.

cides which control anthracnose also control spur blight.

Verticillium Wilt. The fungus causing this disease occurs in the soil, enters through the roots and interferes with water movement. In midsummer, lower leaves of new shoots turn yellow and drop, starting at the base of the shoot. Leaflets drop first, leaving the patioles attached to the shoots. Finally only the leaves at the tip of the shoot remain (Figure 6). Shoots turn blue or purple, sometimes just along one side.

The name "bluestem" is sometimes given to this disease. Affected shoots are stunted and die. Usually only some of the shoots of a plant are affected. Black raspberries are especially susceptible, but the disease should not be confused with the normal blue coloring of black raspberry canes. Dig out and destroy affected plants. Avoid planting in soils where this disease has been a problem.

Viruses. These diseases cause poor plant vigor, low yields, short life of plantings and crumbly berries. Once plants are infected, they cannot be cured and all plants they produce are infected. Mosaic is a common virus disease. It causes a pale green to yellow mottling and some puckering of leaves. Affected plants are most readily recognized in June. Leaf curl is another virus disease. Affected plants have dark green, small, tightly curled leaves and are quite conspicuous. These viruses are spread by aphids. Set out plants from a virus-indexed source. Remove and destroy affected plants as soon as they appear. If many plants are affected, consider starting a new planting.

Sterility of blackberries is caused by a virus or viruses. Flowers appear normal but no berries develop. Plants often are more vigorous than those which produce normal berries. Plants do not recover from sterility and should be removed and destroyed. Obtain plants from productive plantings.

Winter Injury. Low or fluctuating winter temperatures, low temperatures in the fall before canes are mature, and cold drying winds cause "winter injury". The top part of a cane is killed. The dead area may include much or all of a cane. Below the dead area, buds may be weakened and leaf out late or produce weak growth. Yellowing and dying of branches at fruiting time is often the result of winter injury. Plant hardy varieties and follow cultural practices which do not prolong growth late in the fall.

Poor-Drainage Injury. Most of the injury from poor drainage occurs between late fall and early spring. A high water level in the soil suffocates roots causing them to die. Then, when plants need much water at fruiting time, the reduced root system cannot supply it. Fruiting branches turn yellow and die. New shoots may grow well in the summer when soil moisture is normally low. However, injury again occurs when the soil becomes excessively wet over the winter. Plant in well-drained soil.



10M
ISSN 0 225 7882